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Prepared for Practice and Equipped for Employment: what do Dental Foundation Trainers think of their trainees?

Introduction

Preparing dental students for independent practice and equipping them for future employment is the overarching objective of an accredited undergraduate dentistry programme.¹ UK dental schools must demonstrate to the General Dental Council (GDC) that their students have been successfully assessed against all one hundred and fifty-two 'Dental Team learning outcomes for registration'² prior to supporting their application for professional registration. The GDC have developed these learning outcomes to ensure that each new dentist is a "safe beginner"¹.

These learning outcomes published in 2012, updated in 2015, are based upon four integrated domains; clinical, communication, professionalism, and management and leadership. These domains support and overlap one another with some specific outcomes existing in more than one area, and with clinical/technical skills and underpinning scientific knowledge forming the central core as depicted in figure 1.²

Figure 1: GDC learning outcomes domains taken from 'Preparing for Practice'

In the UK any new GDC registered dentist wishing to work in the NHS is required to undertake one year of Dental Foundation Training (DFT) under the supervision of an approved trainer in a primary care dental practice setting. These trainers are therefore ideally placed to evaluate the 'preparedness for practice' of their Foundation Dentist (FD).

A definition of preparedness for practice from recent literature is:

¹ Definition of safe beginner *"a rounded professional who, in addition to being a competent clinician, will have the range of professional skills required to begin working as part of a dental team and be well prepared for independent practice. They will be able to assess their own capabilities and limitations, act within these boundaries and will know when to request support and advice".*²

“being capable of carrying out patient assessment and treatment planning, perform routine, straightforward dental procedures safely, provide holistic care, communicate effectively, demonstrate professionalism and team-working skills, recognise their limits and know when to seek help”.³

Although this definition aligns well with the GDC’s learning outcomes it is unclear if either of these coincide with trainers’ views on what makes a new dentist prepared, or even if they are cognisant of any specific definition. In fact the concept of ‘preparedness’ in itself can be problematic, with the term being related to clinical or technical performance, competence and/or confidence, depending on the understanding and opinions of the stakeholder being asked.⁴ A number of studies have recently investigated this concept with data collected in 2010⁵, 2015⁶ and 2012⁷ respectively. This work complements these other studies.

On completion of their foundation year, the FD has to seek a new position. This position can be in any number of a variety of primary or secondary care settings with or without ongoing educational and clinical mentorship and supervision. Entry into DFT is via a national application process that takes into account performance across a set of assessments. Historically, gaining employment after DFT has not been an issue for the profession and ‘out of work’ dentists a rarity. Up until this time, therefore, new dentists have not had to worry about their general ‘employability’ status. How long this will continue is a topic of debate among recent graduates.⁸

Employability is not the same as employment and Higher Education providers across all subject areas are expected to graduate individuals with a generic transferable skill set, in addition to subject specific abilities, to support their success in the employment market (<https://www.heacademy.ac.uk/knowledge-hub/defining-and-developing-your-approach-employability-framework-higher-education>). This is known as ‘pedagogy for employability’, and is defined as the,

“teaching and learning of a wide range of skills, understandings and personal attributes at undergraduate and foundation level which enhance future employability..... that make graduates more likely to gain employment and be

successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy".^{9, 10}

Due to the variety of employment options available after DFT these skills will of necessity be wide ranging and cover a broad spectrum of activities.

While the existing studies evaluate trainers' expectations and perceptions of graduates^{5,6,7} as well as their generic experience of the initial 'preparedness' of their trainees for the workplace; none of them look further ahead to thoughts on future employability after DFT.

It is assumed that the GDC learning outcomes, which support the production of safe beginners able to work in 'independent practice'², correlate with the skills and abilities required for employability. To date the researchers are unaware of any studies in the literature that bring these independent concepts of "Preparedness for practice" and "Pedagogy for employability" together in a meaningful way.

This research investigates and compares these areas through identifying trainers' perceptions of the preparedness of their FD; and whether they would employ their FD in future if they could. Both these elements are investigated in relation to specific competencies developed from the four GDC learning outcome domains embedded in current undergraduate curricula, outcomes of earlier studies, and recent work on preparedness for practice^{2, 3}.

Material and Methods

Study design and data collection

This study was a primary research cohort study, combining quantitative and qualitative methodologies to investigate the thoughts and perceptions of DFT trainers. It combined information on whether they felt dental graduates were prepared for practice and whether they would employ them if they could. The study participants were DFT trainers in England and Wales for the academic year 2013/14 (n=667).

Ethical approval was obtained from Plymouth University Faculty of Health and Human Sciences (reference number: 13/14-163).

Data collection was through a Survey Monkey© questionnaire. An invitation letter and link to the online questionnaire were distributed by email to DFT trainers via the Dental Deans of all postgraduate deaneries in England and Wales. The questionnaire was distributed and opened on 5th June 2014 and closed at the end of August 2014; towards the latter quarter of the DFT period. The questionnaires were distributed and study recruitment participation controlled by COPDEND, who authorise and regulate all national studies involving DFT in the dental deaneries.

Demographic data about the trainee were gathered, including place of undergraduate study, year of graduation, age, ethnicity, and gender. Agreement with statements related to specific positive trainee qualities were recorded against five-point Likert scales anchored at 'Strongly Agree' and 'Strongly Disagree'. Three statements asking about negative attributes of the trainee were included for enhancing internal validity. Participants were then asked how likely they would be to employ their trainee in future if they could. The attributes being investigated were linked to criteria from all four domains of the GDC Preparing for Practice learning outcomes document and recently identified criteria related to being prepared for practice.^{2,3} Open qualitative questions were included for free-text responses to "what is the best and worst attribute of your Foundation Dentist", and "any other comments".

Data management

Data were kept strictly confidential, securely stored on password encrypted university computers, in password-protected files. All data were handled in compliance with the Data Protection Act (1998). Participants were anonymous to the researchers as details were not included in the Survey Monkey© questionnaire.

Data analysis

All quantitative data was entered into SPSS v21 (SPSS Inc., Chicago, IL, USA) and analysed through psychometric comparative and descriptive processes. Although Likert scales are

strictly not compatible with in depth statistical interrogation, the analyses employed (e.g. Pearson's correlation) were considered suitable after numerical values were given to each of the Likert responses (strongly agree, agree, neither agree nor disagree, disagree and strongly disagree).¹⁰

Qualitative analysis of the free-text responses was undertaken by data driven descriptive thematic analysis. Researchers worked together, initially immersing themselves in and familiarising themselves with, the data. Analysis was undertaken collectively with all three researchers until they were in agreement on final decisions. Segments of text produced by participants were closely analysed and codes created and assigned. Where segments of text fell into more than one code they were included in all relevant codes. Descriptive codes were refined and reviewed until all text was allocated to the coding system. Overarching thematic categories were then identified and data, codes and categories revisited and refined until no new categories were identified and the saturation point reached.

Results

138 DFT trainers responded to the survey; a response rate of 20.7% (n=667).

Descriptive and comparative analysis of the demographic data (including trainee age, gender, ethnicity, undergraduate institution, and year of graduation) showed that there was a random distribution of all these criteria with all but one of the 15 UK undergraduate institutions represented. Glasgow was the only institution not represented and 4 FDs had graduated from a non-UK institution (Cork, Dublin, and Prague). No associations were found between any of the demographic factors and agreement ratings on any items.

Less than half of responding trainers (43%) agreed that their FD was prepared for practice; with one-third (33%) explicitly disagreeing (Figure 2). In contrast, more than half (55%) agreed that they would employ their FD if they could, with only one quarter (26%) disagreeing (Figure 2).

Figure 2: whether trainers thought their FD was prepared for practice and if they could, they would employ them

The descriptive statistics of all the precise characteristics garnered from GDC criteria specifically covered in the questionnaire are described in figure 3. These show that DFT trainers overall tended to agree that the FDs have appropriate clinical skills, communicate well with their patients, work well in the dental team and are self-directed reflective practitioners who know their limitations and seek assistance if required.

Figure 3: Positive FD attributes as rated by DFT trainers

Each of these individual characteristics was compared to both trainers' perceptions of preparedness for practice and potential for future employability (Table 1). Once the agreement scales had been converted to a numeric score, relationships between questions were explored with correlation analyses (Pearson correlation). Negative items, deliberately included in the questionnaire to enhance internal validity, showed negative association, as hoped (see Table 1). All the areas related to being prepared correlated with trainer's views on their FDs future employability.

Table 1: Showing the Pearson Correlation and statistical significance between preparedness for employability and related FD attributes.

Figure legend: Significance value occurs at $<.001$ for all areas except where stated otherwise in Table 1. Green boxes identify positive statistically significant correlations between individual variables against preparedness and employability. Red boxes identify the 3 negative correlations, meaning that if a trainer agreed with the statement they were more likely to disagree that the trainees were prepared and/or employable.

Not all the trainers who thought their trainees were prepared for practice would employ them in future if they could; and of the 55% of trainers who would employ them, 8% had previously **disagreed** that they were prepared for practice.

Of the top 3 positive predictive elements of preparedness and employability, two were shared: 'appropriate clinical technical skills and knowledge' and that FDs were 'capable of independent self-directed reflective practice'.

The two domains did not share the 3rd predicate, with preparedness more likely to be reported when trainers perceived the current FD could 'communicate and work well with

patients' and employability if they were 'capable of obtaining a comprehensive dental history'.

Of the top 3 negative predictive elements of preparedness and employability, all were shared; lack of independent reflective practitioner ability, not fitting in with the rest of the team and lack of suitable clinical skills and knowledge. However, the correlation was much stronger for employability than preparedness.

A vital and little studied aspect for a trainer and practice reputation is patient satisfaction with the treatment they have received. Not surprisingly, trainers found this to be an important area which if positively reported was more likely to result in trainees being deemed prepared for practice and more likely to be offered employment. 4% of trainers disagreed that the patients seen by the FD were happy while 12% reserved judgement. Reasons for this were not investigated and may vary but it does suggest that trainers felt that 16% of patients may not be happy with the treatment they receive from their FD.

Analysis of the free text data yielded the categories shown in Table 2. Not surprisingly positive and negative values relating to the same categories were applicable for both best and worse attributes. Of categories only attributable to best OR worst; behaviour, self-management, organisation & timekeeping were mentioned solely as worst attributes; and knowledge solely attributed to the best feature.

Table 2: Categories defined from analysis of the free text related to FD attributes

The most common worst attribute of a trainee was poor clinical skills and the most common best attribute, communication.

Trainers mentioned themes of 'time management' and 'attendance' in both best and worst attributes. "*Never had a sick day*" and "*conscientious and always in early...*" were among the positive attributes trainers found worthy of commenting on. Comparatively "*often late*", "*sick often*", "*poor punctuality*", "*poor time management*" and "*poor timekeeping*" were deemed to be amongst the worst traits of FDs.

Areas where trainers perceived their trainees to be prepared but would not employ them included *“self- critical”, “sets very high standards for themselves and gets upset if cannot achieve them immediately”, “not aware of limitations and unable to reflect on poor performance”, “doesn’t like the business side of dentistry, prefers to be in the salaried services”*.

Conversely, where trainers thought their trainee was not prepared, but would employ them they mentioned the following: *“good communication with patients”, “willingness to learn and seek advice”, “not used to talking about money”, “personable, excellent communicator valued member of the team”, “keen interest in the practice of dentistry and always willing to learn”*.

Where trainers did not agree their trainees were prepared neither would they employ them, the main reasons given were a lack of clinical skill, not fitting in with the team, poor time management, lack of personal motivation, poor attitude and/or the lack of ability to self-reflect.

Comments included *“didn’t want to be here”, “wanted to get back to London ASAP”, “lack of enthusiasm - translate to lazy”, “takes constructive feedback poorly and defensively and is never wrong”, “blind belief that undergraduate tutors opinions are gospel...or they have a corrupt interpretation of them”, “arrogance, unprofessionalism, incompetent”, “cannot cope with dentistry as a career”, “does the minimum to get by”, “inability to use knowledge in a practical situation”, “tries to cut corners clinically and in record keeping”*.

Trainers’ comments reveal frustration about the perceived failing of their trainee’s undergraduate education and that it puts trainers in a difficult position:

“The training [they] got at undergraduate level was very poor and I feel [they] should not have graduated as [they] did not have enough clinical experience.”

“I do not feel the weaknesses are entirely the doing of the DF1. I feel their education from school through to undergraduate training may have a significant factor in the way they learn and their attitude to teaching-learning and the balance of this

responsibility. As DF Trainers, we have been encouraged to move away from traditional 'didactic' learning but I have witnessed more and more DF1s "expecting" to be taught and spoonfed with little onus on creating or trying to identify their own learning needs".

Discussion

Trainer expectations

Gilmour noted the lack of agreement that trainees are prepared for practice may be partly due to the impact of trainer's expectations; he reported that trainer expectations of FDs reduced as their experience of FDs increased. Similarly, both Ray ⁷ and Oxley ⁶ found that the more experienced trainers rated the overall preparedness of their FDs lower than less experienced trainers.

Raising awareness of the perceptions of these experienced practitioners would be beneficial in order to highlight potential additional training needs of students, as well as realistic expectations of the DFT setting. The areas often related as being less than satisfactory in new graduates are typically crown and bridge, extractions, dentures and endodontics (in particular in multi rooted teeth) ^{5, 6, 7}. We did not explore the specific clinical areas in this study, but note that having the appropriate level of clinical skill was the strongest indicator that individuals would be perceived as being prepared for practice and equipped for employability. Further consideration by curriculum planners and support for DFT trainers in how to manage these perceived shortcomings in 'appropriate level of skill' is recommended. This aligns with the views of Blaylock et al ¹⁶ in their work to enhance the link between University undergraduate teaching and HEE postgraduate educators to ease the transition into DFT.

Definition of Prepared for Practice

In addition, and relevant to all these studies, we do not know what definition, if any, trainers used for "prepared for practice". We are also unaware if individual trainers are au fait with the GDC undergraduate learning outcomes, and aim of undergraduate education.

Further work on defining and disseminating a relevant notion of 'preparedness' is advised to explore its influence on the management of various expectations; especially for newer trainers. This has already proven to be helpful in the previously mentioned study strengthening the interaction between undergraduate and postgraduate education services

16.

Distinction needs to be made about whether we are preparing our dental students for (NHS) dental 'practice' or the generic 'practise' of clinical dentistry and working collaboration is needed between the Dental Schools, the GDC and postgraduate HEE deaneries to manage curriculum development as well as trainers' expectations and remit. It is essential to be mindful that not all of our graduates will ultimately end up working in General Dental Practice, and, certainly at the current time, undergraduate education, needs to also prepare them for the practise of dentistry and overall 'employability' in various other dental contexts.

Definition of Safe Beginner

Dental schools and practitioners who work with these 'safe beginners' may disagree on whether they are truly 'safe' when treating patients independently and unsupervised, as well as in relation to the level of clinical skill expected. This again requires a comparable definition of 'safe beginner' across contexts, just as we may require a consensus view on 'preparedness'.

Results suggest that trainers may make allowances for some poor clinical and independent practitioner abilities during the foundation year, but beyond that see this as a crucial consideration in offering employment. This may not be surprising, as part of the role of a trainer is to support the improvement of their FD over the DFT period, so they may expect and note the growth and development over that time.

This theory is supported in trainer quotes:

"I believe the dental students as a whole are high quality students but dental school does not prepare them for life as an FD or a general practitioner. FD trainers have to

teach basic skills which should have been already covered at undergraduate level. My FD has learned a lot and has progressed well. With the training [they have] been given and experience [they have] had this FD year [they are] a competent clinician”.

“I feel that the undergraduate curriculum has ill prepared the current FD. [They] possess excellent theoretical knowledge but did not have the opportunity as an undergraduate to practice skills [they] should have developed in a protected environment. Trainers have had to bridge the gap.”

Additionally this highlights the need for provision of educational training for the DFT trainer if they have an FD they perceive to be weak, so that they can support the development that is obviously deemed important.

An important element of being a safe beginner is knowing when to seek help. With this in mind it is reassuring to confirm that the majority of DFT trainers agreed that communication skills, being a team player and reflective practitioner are important attributes of an FD. In Gilmour’s 2010 study 20.6% of trainers found that the biggest difficulty they had was their trainee not knowing when to seek help ⁵ while, in stark contrast, our current data showed 91% felt this area was satisfactory or not commented on. GDC undergraduate learning outcomes include areas related to self-awareness and recognising one’s own limitations and it is encouraging to see that the negative view by trainers of this attribute appears to have improved in the years following introduction of these learning outcomes.

Patient Satisfaction

It has been reported *“in cases in which patients were not satisfied, dentists seldom were aware”* ¹⁷ and that *“patient satisfaction is multifaceted and constitutes a complex set of objective and subjective elements. A large aspect of this relationship involves communication”*. ¹⁷ It is interesting therefore to note that communication was mentioned as the best attribute of an FD and third most likely descriptor to be associated with the perception of preparedness.

Ray et al ⁷ commented that,

“Communication with patients has been rated by ESs [education superiors – trainers] as the single most important trait in a good dentist, although felt to be the area where FDs were most likely to fall short in their actual expected performance.”

Their data were collected in 2012 just as the new learning outcomes were being introduced with their emphasis on communication as an entire domain (figure 1). Both our data, along with that collected in 2015 by Oxley, demonstrate an improvement in communication skills which may be linked to changing education strategies in response to these learning outcomes. With the statutory requirement to fulfil the obligation that patients expect to be communicated with in a way they understand, as detailed in the 2013 “Standards for the Dental Team” document (<https://www.gdc-uk.org/professionals/standards/team>) these results are noteworthy.

Personal & professional qualities

Both qualitative and quantitative data suggested that employability shares many underpinning characteristics with preparedness, but that there are some specific areas which are discrete. Reasons for the discordance (in either direction) were overwhelmingly related to personal attributes of the trainee, and/or business, professional or context compatibility issues.

It would appear therefore, that an engagement with, and positive attitude toward, being a member of the practice team as well as an enthusiasm to learn and develop, enhances an individual’s employability. In these cases, it seems this may be more fundamentally important to future employers than other, more technical qualities.

Many of the “worst attributes” defined by trainers that relate to these qualities are also embedded in the GDC professionalism and management and leadership outcome domains.

While concepts relating to students’ professionalism have multiple definitions and incorporate a wide range of attitudes and behaviours, they remain “*one of the most intangible and difficult areas within both undergraduate and postgraduate training*”¹⁸.

However as they are seen to be fundamental to clinical practice, curricula need to ensure

that students are adequately prepared by educating for, assessing, and appropriately reacting to, behaviours within these domains.

The challenge will be to incorporate all of these areas within the same limited time period, while also addressing the perception that graduates may be seen to be lacking in clinical skill.

Trustworthiness of data

Although the overall response rate to the survey was poor at 20.6%, other recent studies showed slightly higher but overall similar low response rates of 35%,⁷ and 28%.⁶ Pressure of work and frequent requests to complete commercial surveys have been cited as reasons for poor response rates among dentists and GPs.^{11, 12} While many strategies described by the literature to enhance response were used^{13, 14} they appeared not to have been effective in this case. One participant had written *“I hate questionnaires that force a response”* and another a single letter *“g”* in all the boxes asking for free text. Enforced free text answering perhaps combined with lack of time/motivation may be additional reasons for non-response.

Low response raises the possibility of response bias and threats to the validity of the findings. However, it is considered that non-response is a source of error only if responders and non-responders differ in crucial ways.¹⁵ FD demographic data provided by respondents exhibited a wide coverage of areas and no correlation to the results, so there is no reason to suspect that non-responders would have provided different data to the responders. The population size was relatively large and with one-fifth responding there is still a suitable amount of data. This is linked to well defined and clearly evidenced domains, triangulated with other relevant literature,^{5, 6, 7} and collected and analysed within a robust and transparent research process and methodology. The non-academic independent researcher is a general dentist and not aware of the GDC domains of undergraduate education prior to data analysis. Therefore, whilst the low response rate suggests the findings of the study should be interpreted with caution, the results of the study are more trustworthy due to the rigour of the process.

Conclusion

DFT trainers are in a unique position to offer information on whether FDs are 'prepared for practice' and 'equipped for employment'; this study offers an insight into their perspectives. We have added to the mounting body of independent evidence from different centres that suggest DFT trainers perceive that FDs may not be prepared for practice.

We caution these results against the importance of having a shared definition of preparedness across undergraduate and postgraduate education, and of the need to enhance communication and links between the various providers and stakeholders.

Dialogue with and support for all involved is desirable to reinforce and guide expectations regarding whether undergraduate institutions are preparing graduates for NHS dental practice or the generic practise of dentistry. We need to more clearly define the undergraduate dental curriculum aims and trainer's subsequent role in the development of our graduates' journey from safe beginner to more experienced dentist.

For the first time we explore the notion of employability in dentistry. It appears that the same attributes underpin the perception of both preparedness for practice and employability, but there are some specific qualities that may impact on an individual's future employability alone.

Finally, we have highlighted additional skills and qualities related to personal and professional realms that trainers have reported influence one or both of these areas. They are complex and challenging to educate for and about, but if we can devise successful interventions for their development will undoubtedly influence individual graduates in a positive way.

In the complex, financially constrained and ever-changing world of the dental profession, NHS dentistry and Higher Education, these issues are imperative to address if we are successfully to continue developing high quality clinicians of the future.

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APPENDIX - figures and tables from article

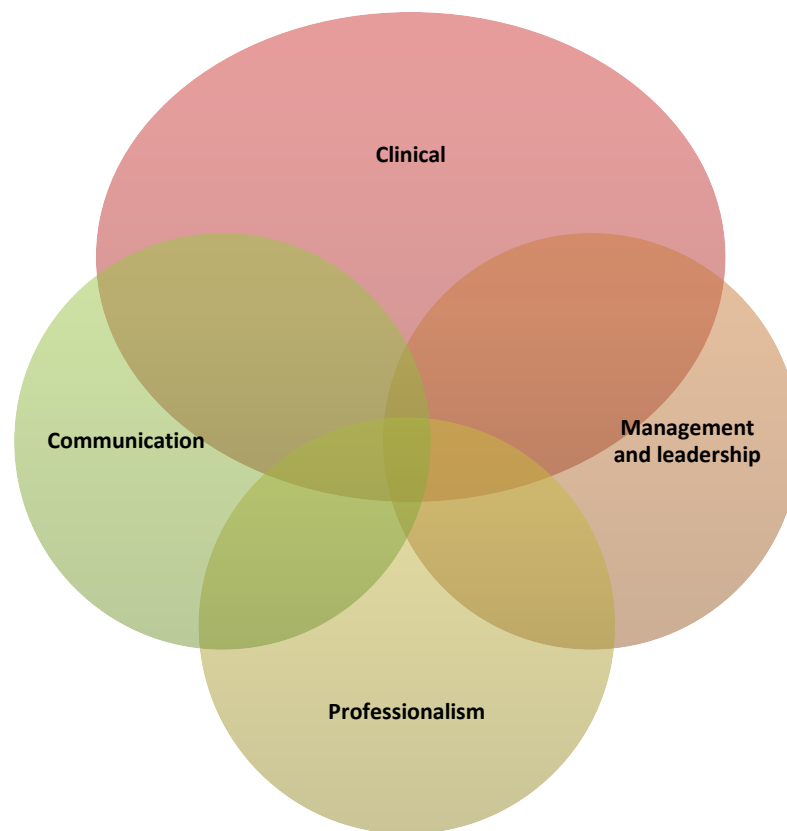


Fig. 1 GDC learning outcomes domains taken from 'Preparing for practice'

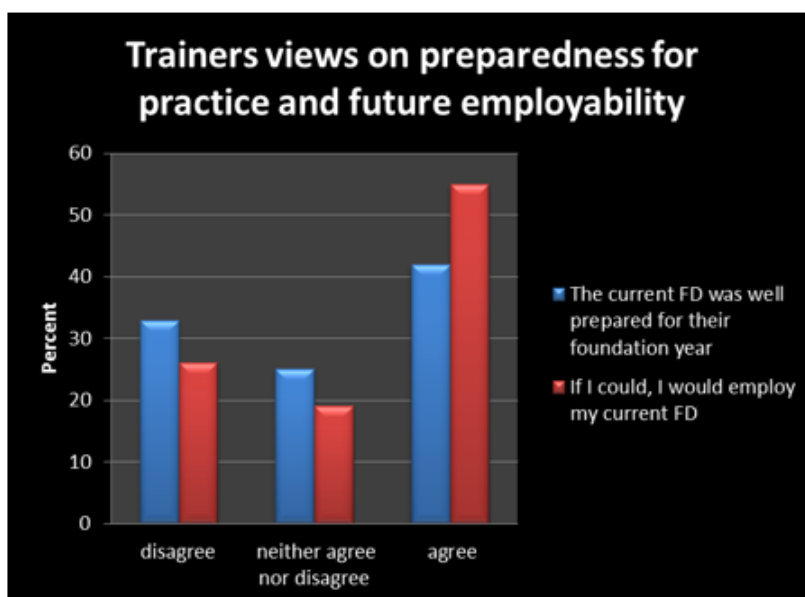


Fig. 2 FD was prepared for practice and if they could, they would employ them

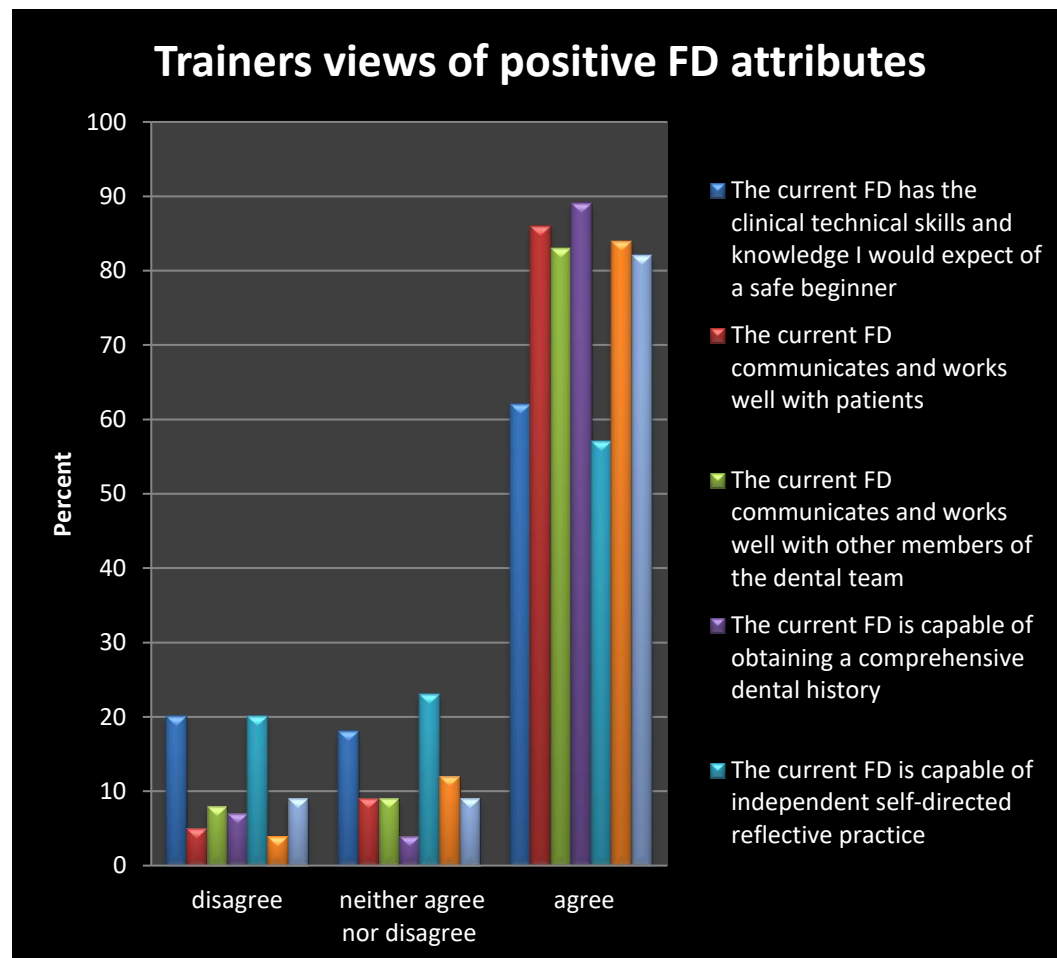


Fig. 3 Positive FD attributes as rated by DFT trainer

Table 1 Showing the Pearson correlation and statistical significance between preparedness for employability and related FD attributes. Significance value occurs at <0.001 for all areas except where stated otherwise in Table 1. Green boxes identify positive statistically significant correlations between individual variables against preparedness and employability. Red boxes identify the three negative correlations, meaning that if a trainer agreed with the statement they were more likely to disagree that the trainees were prepared and/or employable

	The current FD was well prepared for their foundation year	If I could, I would employ my current FD
The current FD has the clinical technical skills and knowledge I would expect of a safe beginner	.790	.579
The current FD communicates and works well with patients	.543	.509
The current FD communicates and works well with other members of the dental team	.466	.511
The current FD is capable of obtaining a comprehensive dental history	.516	.533

The current FD is capable of independent self-directed reflective practice	.626	.518
The current FD has the clinical technical skills and knowledge below the level I would expect of a safe beginner	.058 Sig (2 tailed) .500	-.108 Sig (2 tailed) .219
Generally the patients that are seen by the current FD are happy with their treatment	.472	.475
The other members of the dental team do not feel that the current FD fits in well with the practice	-.247 Sig (2 tailed) .004	-.427 Sig (2 tailed) .000
The current FD requires my input in order to reflect on their work	-.285 Sig (2 tailed) .001	-.432 Sig (2 tailed) .000
The current FD is aware of their limitations and asks for assistance when required	.424	.512

Table 2: Categories defined from analysis of the free text related to FD attributes

What is the best attribute of your FD	What is the worst attribute of your FD
Attendance	Attendance
Attitude	Attitude
Clinical	Behaviour
Communication	Clinical
Confidence	Communication
Empathy	Confidence
Ethical	Empathy
Insight	Insight
Interpersonal skills	Interpersonal skills
Knowledge	Management
Motivation	Motivation
Professional	Organisation
Reflective practice	Professionalism
Team working	Reflective practice
	Team working
	Timekeeping
	Other